which way it will, the expense will sadly reduce the anticipated profit.

The necessity of contractors getting a thorough knowledge of the ground on which they are to operate cannot be too often or too strongly impressed upon them: another grand rule of action is undoubtedly not to be niggardly in furnishing the necessary *struts and planks*; nothing can be more foolishly wise than to begrudge a few planks; it is true they are costly at first, but as they will keep and serve for many contracts, it will in the end be found more profitable to use a good plank than to use an indifferent one: for, like good horses, when once got together, they cost no more to keep than indifferent ones.

It will follow, of course, from the nature of sewer excavations, that *depth* is a most important item in the cost, as well as the run of cartage, for as both increase so also will the expenses, and generally the latter in a much greater ratio than the former, especially if the depth at all exceeds what may be considered a fair moderate working depth, for both will require not only more time, which is money, but more plant and material.

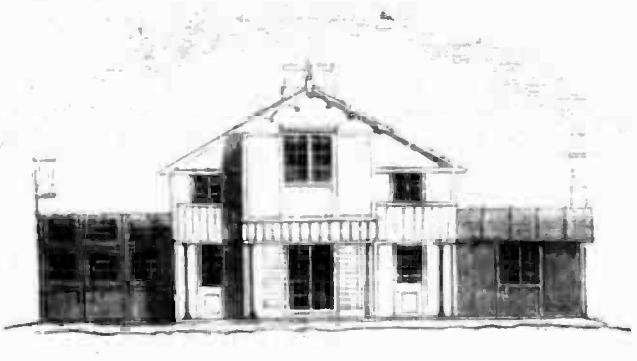
The average depth of a *lift* or *throw* ought not to exceed six feet, and all depths exceeding that, must be charged higher in proportion, varying, of course, with the circumstances attending the case; but generally in loose soils of ordinary workable quality, the price will be found to range between 6d. to 8d. per yard for the opening or first throw, but not often so much as the latter; and in stiff soils, say heavy indurated clay and hard gravel, the range will run from 6d. to 10d. or 11d., supposing, of course, that no pumping in either case is required, and that the wheeling does not exceed about 25 to 30 yards. I have, in some instances, known the price for carting about half a mile, to be so low as 5d. per 1¼ cubic yard, which, however, is no criterion for work near London or large towns. As I have not much space left to enter into the matter of costs just now, I will avail myself of a further opportunity if agreeable.

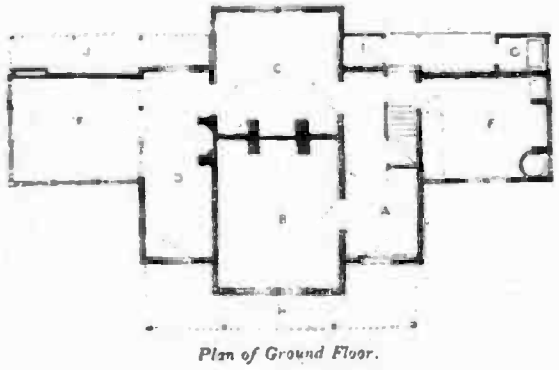
The cost of works of the character now under notice will always be attended by some uncertainty or other, especially in narrow places, which cannot be too minutely surveyed and examined before the contract is entered upon; for as it often happens the sewer has to be carried through some old-fashioned narrow street, the houses of which are all in a feeble dilapidated condition, barely holding each other up, so that when the work commences a fearful outlay is incurred in propping up the houses to ease the pressure on the excavation, the *per centage* of which outlay must be got out of the additional charge in the rate of earth work.

Some time since I had to deal with a curious case of sewer running, which had been let out to labourers of little judgment, and less capital; they were of course exceedingly anxious, like all other contractors, to make the most of their bargain, to effect which they used but little planking; and as the work was partially in very heavy blue clay, it ultimately fell in upon them; the result of course was a very heavy loss, so much so, that they had to give up the contract to a second party, who took it off their hands at the same rate they had originally stipulated for. The new contractor went to work in the most economical way he could devise, and got together a heap of common hurdles, and lined the work with them, lapping one end of each hurdle over the other far enough to allow of upright planks being put over the joints on each side by the work, and then kept in their proper places at struts driven in the usual way between the planks of top and bottom; thus lining, as it were, the whole length of the excavation with hurdles; with this simple and novel lining he went through the work without meeting with a single accident, and succeeded in completing it, with a satisfactory profit for the reward of ingenuity.

In conclusion, let me venture to suggest to your practical readers, that statements of their professional practice, with the costs attending them, would be a feature new to the busy world of periodic literature as sterlingly useful as it would be strikingly novel.

JOSEPH LOCKWOOD, Surveyor, &c.
52, Lime Street, London.





Plan of Ground Floor.

Plan of Chamber Floor.

TO THE EDITOR OF THE BUILDER.

SIR,—Should you deem the annexed worthy a place in your valuable paper, as an economically constructed cottage, suitable for a small rectory or curate's house, or half-pay officer's, possessing in its arrangements the necessary domestic and elegant comforts that persons of the above class require, and forming in its arranged plan the nucleus of houses of greater pretensions, its insertion will oblige.

A cottage of this description might be built in any part of England at a cost of from 250*l.* to 300*l.* I remain, Sir, your admirer,

A CARPENTER.

Description of a stud-framed house, filled in with brick hog, and stuccoed with stone lime between the studs.

A.	Hall and stairs	18×7
B.	Drawing-room	14×12
C.	Dining-room	12×12
D.	Library	18×7
E.	Green-house	12×10
F.	Kitchen	12×10
G.	Vespasian.	
H.	Verandah.	
I.	Larder.	
J.	Potting shed and stove.	
K.	Landing	10×7
L.	Sleeping-room	12×12
M.	Ditto	14×12
N.	Ditto	18×7
O.	Ditto	7×7

TRIANGULAR DRAWING INSTRUMENTS.

ACCORDING to our promise given in No. 20, we feel great pleasure in being able to direct our readers' attention to the following communication forwarded to us relative to a set of triangular instruments, especially adapted to the wants of amateurs, mechanical, engineering, and architectural draughtsmen.

They consist of a series of 10, arranged in four sets, and are numbered as follows:—

No.	Form.	Denomination.	Angle at the Vertex.
1	Isosceles	Acute Angled	22½°
2	Scaline	Right	67½°
3	Isosceles	do.	45°
5	Scaline	do.	60°
6	Isosceles	Acute	30°
7	Scaline	Right	54°
8	do.	do.	72°
9	Isosceles	Acute	18°
11	Scaline	Right	34° 44′
1	do.	do.	76° 33′

By Nos. 1, 2, and 3, may circles be divided into 2, 4, 8, 16, and 32 equal parts; and squares and polygons of 8, 16, and 32 equal sides be described within or about circles.

By Nos. 5, 6, 2, and 3, may circles be divided into 3, 6, 12, 24, and 48 equal parts; and equilateral triangles and polygons of 6, 12, 24, and 48 equal sides, be described within or about circles.

By Nos. 7, 8, and 9 may circles be divided into 5, 10, 20, and 40 equal parts; and polygons of 5, 10, 20, and 40 equal sides, be described within or about circles.

The triangles from 1 to 9 may also be employed in describing triangles, squares, and polygons; by having a radial line, or the length of a side given.

Further, by any of the right-angled triangles may a line be divided into 2, 4, 8, 16, 32, &c. equal parts. No. 3 will be found most convenient for this purpose; and to such a nicety may this be performed, that by using these instruments, a skilful draughtsman may almost divide a line as accurately as can be accomplished by a dividing machine; for we have now before us a line of 1¼ inch in length, divided into 64 equal parts; and from what we see of the system, there would be no difficulty in subdividing it into 256 parts.

By No. 5, may lines be most readily divided into:—

3, 9, 27, 81, &c.
6, 12, 24, 48, &c.
18, 36, 72, 144, &c.
} equal parts

Nos. 3, 5, 8, 1, and 11, will be found of great utility in the practice of isometrical drawing.

We proceed to furnish a few simple illustrations, from which all who take any pleasure in the practice of drawing will be able to de-

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